

Claims

What is claimed is:

1. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:
 - a support member;
 - a cutting device for cutting the tubular member coupled to the support member;
 - an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member;
 - a locking device for locking the position of the tubular member relative to the support member; and
 - an actuator for displacing the expansion device relative to the support member;wherein the actuator comprises:
 - a first actuator for pulling the expansion device; and
 - a second actuator for pushing the expansion device.
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50. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:

- a support member;
- an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member;
- an actuator coupled to the support member for displacing the expansion device relative to the support member; and
- a locking device for locking the position of the tubular member relative to the support member comprising one or more locking elements for engaging an interior surface of the expandable tubular member.

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95. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:

a support member;

an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member;

a sealing assembly for sealing an annulus defined between the support member and the tubular member;

a locking device for locking the position of the tubular member relative to the support member; and

an actuator for displacing the expansion device relative to the support member;

wherein the actuator comprises:

a first actuator for pulling the expansion device; and

a second actuator for pushing the expansion device.

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142. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:

- a support member;

- a first expansion device for radially expanding and plastically deforming the tubular member coupled to the support member;

- a second expansion device for radially expanding and plastically deforming the tubular member coupled to the support member;

- a locking device for locking the position of the tubular member relative to the support member; and

- an actuator for displacing the expansion device relative to the support member;

- wherein the actuator comprises:

- a first actuator for pulling the expansion device; and

- a second actuator for pushing the expansion device.

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191. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:

- a support member;

- an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member;

- a packer coupled to the support member;

- a locking device for locking the position of the tubular member relative to the support member; and

- an actuator for displacing the expansion device relative to the support member;

- wherein the actuator comprises:

- a first actuator for pulling the expansion device; and

- a second actuator for pushing the expansion device.

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338. A method of radially expanding and plastically deforming a tubular member, comprising:

positioning the tubular member within a preexisting structure;

radially expanding and plastically deforming a lower portion of the tubular member to form a bell section;

radially expanding and plastically deforming a portion of the tubular member above the bell section;

wherein positioning the tubular member within a preexisting structure comprises locking the tubular member to an expansion device.

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544. The apparatus of claim 1, wherein the locking device comprises:
a housing defining a plurality of circumferentially spaced apart openings;
a plurality of circumferentially spaced apart locking elements coupled to the housing
that extend into corresponding openings of the housing for engaging an
interior surface of the expandable tubular member; and
a plurality of spring elements coupled to the housing for biasing corresponding
locking elements out of engagement with the interior surface of the
expandable tubular member.

545. (Canceled)

546. The apparatus of claim 544, wherein the locking device further comprises:
a fluid powered actuator coupled to the housing for displacing the locking element
retainer relative to the locking elements.

547. (Canceled)

548. The apparatus of claim 544, wherein the locking device further comprises:
a pressure sensor coupled to the locking element retainer for displacing the locking
element retainer relative to the locking elements if a sensed operating
condition exceeds a predetermined value.

549. (Canceled)

550. The apparatus of claim 1, wherein at least one of the first and second actuators
comprise:
a locking device for locking the position of the tubular member relative to the support
member.

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557. The apparatus of claim 550, wherein the locking device comprises:
a housing defining a plurality of circumferentially spaced apart openings;
a plurality of circumferentially spaced apart locking elements coupled to the housing
that extend into corresponding openings of the housing for engaging an
interior surface of the expandable tubular member; and
a plurality of spring elements coupled to the housing for biasing corresponding
locking elements out of engagement with the interior surface of the
expandable tubular member.

558. (Canceled)

559. The apparatus of claim 557, wherein the locking device further comprises:
a fluid powered actuator coupled to the housing for displacing the locking element
retainer relative to the locking elements.

560. (Canceled)

561. The apparatus of claim 557, wherein the locking device further comprises:
a pressure sensor coupled to the locking element retainer for displacing the locking
element retainer relative to the locking elements if a sensed operating
condition exceeds a predetermined value.

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576. The apparatus of claim 50, wherein the actuator comprises:
a locking device for locking the position of the tubular member relative to the support member;
wherein the locking device comprises:
one or more locking elements for engaging an interior surface of the expandable tubular member; and
one or more spring elements for biasing corresponding locking elements out of engagement with the interior surface of the expandable tubular member.

577. (Canceled)

578. (Canceled)

579. The apparatus of claim 576, wherein the locking device further comprises:
a fluid powered actuator for displacing the locking element retainer relative to the locking elements.

580. (Canceled)

581. The apparatus of claim 576, wherein the locking device further comprises:
a pressure sensor for displacing the locking element retainer relative to the locking elements if a sensed operating condition exceeds a predetermined value.

582. (Canceled)

583. The apparatus of claim 576, wherein the locking device comprises:
a housing defining a plurality of circumferentially spaced apart openings;
a plurality of circumferentially spaced apart locking elements coupled to the housing that extend into corresponding openings of the housing for engaging an interior surface of the expandable tubular member; and
a plurality of spring elements coupled to the housing for biasing corresponding locking elements out of engagement with the interior surface of the expandable tubular member.

584. (Canceled)

585. The apparatus of claim 583, wherein the locking device further comprises:
a fluid powered actuator coupled to the housing for displacing the locking element retainer relative to the locking elements.

586. (Canceled)

587. The apparatus of claim 583, wherein the locking device further comprises:
a pressure sensor coupled to the locking element retainer for displacing the locking element retainer relative to the locking elements if a sensed operating condition exceeds a predetermined value.

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595. The apparatus of claim 50, wherein the locking device comprises:
a housing defining a plurality of circumferentially spaced apart openings;
a plurality of circumferentially spaced apart locking elements coupled to the housing
that extend into corresponding openings of the housing for engaging an
interior surface of the expandable tubular member; and
a plurality of spring elements coupled to the housing for biasing corresponding
locking elements out of engagement with the interior surface of the
expandable tubular member.

596. (Canceled)

597. The apparatus of claim 595, wherein the locking device further comprises:
a fluid powered actuator coupled to the housing for displacing the locking element
retainer relative to the locking elements.

598. (Canceled)

599. The apparatus of claim 595, wherein the locking device further comprises:
a pressure sensor coupled to the locking element retainer for displacing the locking
element retainer relative to the locking elements if a sensed operating
condition exceeds a predetermined value.

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607. The apparatus of claim 95, wherein the locking device comprises:
a housing defining a plurality of circumferentially spaced apart openings;
a plurality of circumferentially spaced apart locking elements coupled to the housing
that extend into corresponding openings of the housing for engaging an
interior surface of the expandable tubular member; and
a plurality of spring elements coupled to the housing for biasing corresponding
locking elements out of engagement with the interior surface of the
expandable tubular member.

608. (Canceled)

609. The apparatus of claim 607, wherein the locking device further comprises:
a fluid powered actuator coupled to the housing for displacing the locking element
retainer relative to the locking elements.

610. (Canceled)

611. The apparatus of claim 607, wherein the locking device further comprises:
a pressure sensor coupled to the locking element retainer for displacing the locking
element retainer relative to the locking elements if a sensed operating
condition exceeds a predetermined value.

612. (Canceled)

613. The apparatus of claim 95, wherein at least one of the first and second actuators
comprise:
a locking device for locking the position of the tubular member relative to the support
member; wherein the locking device comprises:
one or more locking elements for engaging an interior surface of the expandable
tubular member; and

one or more spring elements for biasing corresponding locking elements out of engagement with the interior surface of the expandable tubular member.

614. (Canceled)

615. (Canceled)

616. The apparatus of claim 613, wherein the locking device further comprises:
a fluid powered actuator for displacing the locking element retainer relative to the locking elements.

617. (Canceled)

618. The apparatus of claim 613, wherein the locking device further comprises:
a pressure sensor for displacing the locking element retainer relative to the locking elements if a sensed operating condition exceeds a predetermined value.

619. (Canceled)

620. The apparatus of claim 613, wherein the locking device comprises:
a housing defining a plurality of circumferentially spaced apart openings;
a plurality of circumferentially spaced apart locking elements coupled to the housing that extend into corresponding openings of the housing for engaging an interior surface of the expandable tubular member; and
a plurality of spring elements coupled to the housing for biasing corresponding locking elements out of engagement with the interior surface of the expandable tubular member.

621. (Canceled)

622. The apparatus of claim 620, wherein the locking device further comprises:
a fluid powered actuator coupled to the housing for displacing the locking element retainer relative to the locking elements.

623. (Canceled)

624. The apparatus of claim 620, wherein the locking device further comprises:
a pressure sensor coupled to the locking element retainer for displacing the locking
element retainer relative to the locking elements if a sensed operating
condition exceeds a predetermined value.

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645. The apparatus of claim 142, wherein the locking device comprises:
a housing defining a plurality of circumferentially spaced apart openings;
a plurality of circumferentially spaced apart locking elements coupled to the housing
that extend into corresponding openings of the housing for engaging an
interior surface of the expandable tubular member; and
a plurality of spring elements coupled to the housing for biasing corresponding
locking elements out of engagement with the interior surface of the
expandable tubular member.

646. (Canceled)

647. The apparatus of claim 645, wherein the locking device further comprises:
a fluid powered actuator coupled to the housing for displacing the locking element
retainer relative to the locking elements.

648. (Canceled)

649. The apparatus of claim 645, wherein the locking device further comprises:
a pressure sensor coupled to the locking element retainer for displacing the locking
element retainer relative to the locking elements if a sensed operating
condition exceeds a predetermined value.

650. (Canceled)

651. The apparatus of claim 142, wherein at least one of the first and second actuators
comprise:
a locking device for locking the position of the tubular member relative to the support
member; wherein the locking device comprises:
one or more locking elements for engaging an interior surface of the expandable

tubular member; and
one or more spring elements for biasing corresponding locking elements out of engagement with the interior surface of the expandable tubular member.

652. (Canceled)

653. (Canceled)

654. The apparatus of claim 652, wherein the locking device further comprises:
a fluid powered actuator for displacing the locking element retainer relative to the locking elements.

655. (Canceled)

656. The apparatus of claim 652, wherein the locking device further comprises:
a pressure sensor for displacing the locking element retainer relative to the locking elements if a sensed operating condition exceeds a predetermined value.

657. (Canceled)

658. The apparatus of claim 651, wherein the locking device comprises:
a housing defining a plurality of circumferentially spaced apart openings;
a plurality of circumferentially spaced apart locking elements coupled to the housing that extend into corresponding openings of the housing for engaging an interior surface of the expandable tubular member; and
a plurality of spring elements coupled to the housing for biasing corresponding locking elements out of engagement with the interior surface of the expandable tubular member.

659. (Canceled)

660. The apparatus of claim 658, wherein the locking device further comprises:
a fluid powered actuator coupled to the housing for displacing the locking element retainer relative to the locking elements.

661. (Canceled)

662. The apparatus of claim 658, wherein the locking device further comprises:
a pressure sensor coupled to the locking element retainer for displacing the locking
element retainer relative to the locking elements if a sensed operating
condition exceeds a predetermined value.

663. (Canceled)

664. (Canceled)

665. (Canceled)

666. (Canceled)

667. (Canceled)

668. (Canceled)

669. (Canceled)

670. (Canceled)

671. (Canceled)

672. (Canceled)

673. (Canceled)

674. (Canceled)

675. (Canceled)

676. (Canceled)

677. The apparatus of claim 191, wherein the locking device comprises:
one or more locking elements for engaging an interior surface of the expandable
tubular member; and
one or more spring elements for biasing corresponding locking elements out of

engagement with the interior surface of the expandable tubular member.

678. (Canceled)

679. The apparatus of claim 677, wherein the locking device further comprises:
a fluid powered actuator for displacing the locking element retainer relative to the
locking elements.

680. (Canceled)

681. The apparatus of claim 677, wherein the locking device further comprises:
a pressure sensor for displacing the locking element retainer relative to the locking
elements if a sensed operating condition exceeds a predetermined value.

682. (Canceled)

683. The apparatus of claim 191, wherein the locking device comprises:
a housing defining a plurality of circumferentially spaced apart openings;
a plurality of circumferentially spaced apart locking elements coupled to the housing
that extend into corresponding openings of the housing for engaging an
interior surface of the expandable tubular member; and
a plurality of spring elements coupled to the housing for biasing corresponding
locking elements out of engagement with the interior surface of the
expandable tubular member.

684. (Canceled)

685. The apparatus of claim 683, wherein the locking device further comprises:
a fluid powered actuator coupled to the housing for displacing the locking element
retainer relative to the locking elements.

686. (Canceled)

687. The apparatus of claim 683, wherein the locking device further comprises:
a pressure sensor coupled to the locking element retainer for displacing the locking
element retainer relative to the locking elements if a sensed operating
condition exceeds a predetermined value.

688. (Canceled)

689. The apparatus of claim 191, wherein at least one of the first and second actuators comprise:

a locking device for locking the position of the tubular member relative to the support member; wherein the locking device comprises:

one or more locking elements for engaging an interior surface of the expandable tubular member; and

one or more spring elements for biasing corresponding locking elements out of engagement with the interior surface of the expandable tubular member.

690. (Canceled)

691. (Canceled)

692. The apparatus of claim 689, wherein the locking device further comprises:

a fluid powered actuator for displacing the locking element retainer relative to the locking elements.

693. (Canceled)

694. The apparatus of claim 689, wherein the locking device further comprises:

a pressure sensor for displacing the locking element retainer relative to the locking elements if a sensed operating condition exceeds a predetermined value.

695. (Canceled)

696. The apparatus of claim 689, wherein the locking device comprises:

a housing defining a plurality of circumferentially spaced apart openings;

a plurality of circumferentially spaced apart locking elements coupled to the housing that extend into corresponding openings of the housing for engaging an interior surface of the expandable tubular member; and

a plurality of spring elements coupled to the housing for biasing corresponding locking elements out of engagement with the interior surface of the expandable tubular member.

697. (Canceled)

698. The apparatus of claim 696, wherein the locking device further comprises:
a fluid powered actuator coupled to the housing for displacing the locking element
retainer relative to the locking elements.

699. (Canceled)

700. The apparatus of claim 696, wherein the locking device further comprises:
a pressure sensor coupled to the locking element retainer for displacing the locking
element retainer relative to the locking elements if a sensed operating
condition exceeds a predetermined value.

701. (Canceled)

702. (Canceled)

703. (Canceled)

704. (Canceled)

705. (Canceled)

706. (Canceled)

707. (Canceled)

708. (Canceled)

709. (Canceled)

710. (Canceled)

711. (Canceled)

712. (Canceled)

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713. (Canceled)

714. (Canceled)

715. (Canceled)

716. (Canceled)

717. (Canceled)

718. (Canceled)

719. (Canceled)

720. (Canceled)

721. (Canceled)

722. (Canceled)

723. (Canceled)

724. (Canceled)

725. (Canceled)

726. (Canceled)

727. (Canceled)

728. (Canceled)

729. (Canceled)

730. (Canceled)

731. (Canceled)

732. (Canceled)

733. (Canceled)

734. (Canceled)

735. (Canceled)

736. (Canceled)

737. (Canceled)

738. (Canceled)

739. (Canceled)

740. (Canceled)

741. (Canceled)

742. (Canceled)

743. (Canceled)

744. (Canceled)

745. (Canceled)

746. (Canceled)

747. (Canceled)

748. (Canceled)

749. (Canceled)

750. (Canceled)

751. (Canceled)

752. The method of claim 338, wherein locking the tubular member to an expansion device comprises:

locking the position of the tubular member relative to a support member.

753. The method of claim 752, wherein locking the position of the tubular member relative to a support member comprises:

engaging the interior surface of the tubular member at a plurality of circumferentially spaced apart locations.

754. The method of claim 753, wherein engaging the interior surface of the tubular member at a plurality of circumferentially spaced apart locations comprises:

engaging the interior surface of the tubular member at a plurality of circumferentially spaced apart locations using one or more engagement members.

755. The method of claim 754, wherein the engagement members are biased out of engagement with the tubular member.

756. The method of claim 752, wherein locking the position of the tubular member relative to a support member comprises:

unlocking the position of the tubular member relative to the support member if an operating condition exceeds a predetermined amount.

757. The method of claim 756, wherein locking the position of the tubular member relative to a support member comprises:

unlocking the position of the tubular member relative to the support member if an operating condition within the tubular member exceeds a predetermined amount.

758. The method of claim 754, wherein locking the position of the tubular member relative to a support member comprises:

releasing the engagement members from engagement with the tubular member relative to the support member if an operating condition exceeds a predetermined amount.

759. (Cancelled)

760. (Cancelled)

761. (Cancelled)

762. (Cancelled)

763. (Cancelled)

764. (Cancelled)

765. (Cancelled)

766. (Cancelled)

767. (Cancelled)

768. (Cancelled)

769. (Cancelled)

770. (Cancelled)

771. (Cancelled)

772. (Cancelled)

773. (Cancelled)

774. (Cancelled)

775. (Cancelled)

776. (Cancelled)

777. (Cancelled)

778. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:

- a support member;
- a cutting device for cutting the tubular member coupled to the support member;
- an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member; and
- a gripping device for gripping the tubular member coupled to the support member.

779. The apparatus of claim 778, wherein the gripping device comprises a plurality of movable gripping elements.

780. The apparatus of claim 779, wherein the gripping elements are moveable in a radial direction relative to the support member.

781. The apparatus of claim 779, wherein the gripping elements are moveable in an axial direction relative to the support member.

782. The apparatus of claim 779, wherein the gripping elements are moveable in a radial and an axial direction relative to the support member.

783. The apparatus of claim 779, wherein the gripping elements are moveable from a first position to a second position; wherein in the first position, the gripping elements do not engage the tubular member; wherein in the second position, the gripping elements do engage the tubular member; and wherein, during the movement from the first position to the second position, the gripping elements move in a radial and an axial direction relative to the support member.

784. The apparatus of claim 779, wherein the gripping elements are moveable from a first position to a second position; wherein in the first position, the gripping elements do not engage the tubular member; wherein in the second position, the gripping elements do engage the tubular member; and wherein, during the movement from the first position to the second position, the gripping elements move in a radial direction relative to the support member.

785. The apparatus of claim 779, wherein the gripping elements are moveable from a first

position to a second position; wherein in the first position, the gripping elements do not engage the tubular member; wherein in the second position, the gripping elements do engage the tubular member; and wherein, during the movement from the first position to the second position, the gripping elements move in an axial direction relative to the support member.

786. The apparatus of claim 779, wherein, if the tubular member is displaced in a first axial direction, the gripping device grips the tubular member; and wherein, if the tubular member is displaced in a second axial direction, the gripping device does not grip the tubular member.

787. The apparatus of claim 779, wherein the gripping elements are moveable from a first position to a second position; wherein in the first position, the gripping elements do not engage the tubular member; wherein in the second position, the gripping elements do engage the tubular member; and wherein, the gripping elements are biased to remain in the first position.

788. The apparatus of claim 779, wherein the gripping device further comprises:
an actuator for moving the gripping elements from a first position to a second position;
wherein in the first position, the gripping elements do not engage the tubular member;
wherein in the second position, the gripping elements do engage the tubular member; and
wherein the actuator is a fluid powered actuator.

789. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:
a support member;
a cutting device for cutting the tubular member coupled to the support member;
an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member; and
a sealing device for sealing an interface with the tubular member coupled to the support member;
wherein the sealing device seals an annulus defined between the support member and the tubular member.

790. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:

- a support member;
- a cutting device for cutting the tubular member coupled to the support member;
- an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member; and
- a locking device for locking the position of the tubular member relative to the support member.

791. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:

- a support member;
- a cutting device for cutting the tubular member coupled to the support member;
- an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member; and
- a packer assembly coupled to the support member.

792. The apparatus of claim 791, wherein the packer assembly comprises:

- a packer; and
- a packer control device for controlling the operation of the packer coupled to the support member.

793. The apparatus of claim 792, wherein the packer comprises:

- a support member defining a passage;
- a shoe comprising a float valve coupled to an end of the support member;
- one or more compressible packer elements movably coupled to the support member;
- and
- a sliding sleeve valve movably positioned within the passage of the support member.

794. The apparatus of claim 792, wherein the packer control device comprises:

- a support member;
- one or more drag blocks releasably coupled to the support member; and
- a stinger coupled to the support member for engaging the packer.

795. The apparatus of claim 792, wherein the packer comprises:

- a support member defining a passage;
- a shoe comprising a float valve coupled to an end of the support member;

one or more compressible packer elements movably coupled to the support member; and
a sliding sleeve valve positioned within the passage of the support member;
and
wherein the packer control device comprises:
a support member;
one or more drag blocks releasably coupled to the support member; and
a stinger coupled to the support member for engaging the sliding sleeve valve.

796. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:

a support member;
a cutting device for cutting the tubular member coupled to the support member;
an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member; and
an actuator for displacing the expansion device relative to the support member.

797. The apparatus of claim 796, wherein the actuator comprises:

a first actuator for pulling the expansion device; and
a second actuator for pushing the expansion device.

798. The apparatus of claim 796, wherein the actuator comprises means for transferring torsional loads between the support member and the expansion device.

799. The apparatus of claim 797, wherein the first and second actuators comprise means for transferring torsional loads between the support member and the expansion device.

800. The apparatus of claim 796, wherein the actuator comprises a plurality of pistons positioned within corresponding piston chambers.

801. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:

a support member;
a cutting device for cutting the tubular member coupled to the support member;
an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member; wherein the cutting device

comprises:

a support member; and

a plurality of movable cutting elements coupled to the support member; and

an actuator coupled to the support member for moving the cutting elements between

a first position and a second position;

wherein in the first position, the cutting elements do not engage the tubular member;

and

wherein in the second position, the cutting elements engage the tubular member.

802. The apparatus of claim 801, further comprising:

a sensor coupled to the support member for sensing the internal diameter of the tubular member.

803. The apparatus of claim 802, wherein the sensor prevents the cutting elements from being moved to the second position if the internal diameter of the tubular member is less than a predetermined value.

804. The apparatus of claim 801, wherein the cutting elements comprise:

a first set of cutting elements; and

a second set of cutting elements;

wherein the first set of cutting elements are interleaved with the second set of cutting elements.

805. The apparatus of claim 804, wherein in the first position, the first set of cutting elements are not axially aligned with the second set of cutting elements.

806. The apparatus of claim 804, wherein in the second position, the first set of cutting elements are axially aligned with the second set of cutting elements.

807. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:

a support member;

a cutting device for cutting the tubular member coupled to the support member; and

an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member;

wherein the expansion device comprises:

a support member; and

a plurality of movable expansion elements coupled to the support member.

808. The apparatus of claim 807, further comprising:
an actuator coupled to the support member for moving the expansion elements
between a first position and a second position;
wherein in the first position, the expansion elements do not engage the tubular
member; and
wherein in the second position, the expansion elements engage the tubular member.
809. The apparatus of claim 808, further comprising:
a sensor coupled to the support member for sensing the internal diameter of the
tubular member.
810. The apparatus of claim 809, wherein the sensor prevents the expansion elements
from being moved to the second position if the internal diameter of the tubular member is
less than a predetermined value.
811. The apparatus of claim 808, wherein the expansion elements comprise:
a first set of expansion elements; and
a second set of expansion elements;
wherein the first set of expansion elements are interleaved with the second set of
expansion elements.
812. The apparatus of claim 811, wherein in the first position, the first set of expansion
elements are not axially aligned with the second set of expansion elements.
813. The apparatus of claim 811, wherein in the second position, the first set of expansion
elements are axially aligned with the second set of expansion elements.
814. An apparatus for radially expanding and plastically deforming an expandable tubular
member, comprising:
a support member;
a cutting device for cutting the tubular member coupled to the support member; and
an expansion device for radially expanding and plastically deforming the tubular member
coupled to the support member;
wherein the expansion device comprises an adjustable expansion device.

815. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:

a support member;

a cutting device for cutting the tubular member coupled to the support member; and

an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member;

wherein the expansion device comprises a plurality of expansion devices.

816. The apparatus of claim 815, wherein at least one of the expansion devices comprises an adjustable expansion device.

817. The apparatus of claim 816, wherein the adjustable expansion device comprises:

a support member; and

a plurality of movable expansion elements coupled to the support member.

818. The apparatus of claim 817, further comprising:

an actuator coupled to the support member for moving the expansion elements

between a first position and a second position;

wherein in the first position, the expansion elements do not engage the tubular member; and

wherein in the second position, the expansion elements engage the tubular member.

819. The apparatus of claim 818, further comprising:

a sensor coupled to the support member for sensing the internal diameter of the tubular member.

820. The apparatus of claim 819, wherein the sensor prevents the expansion elements from being moved to the second position if the internal diameter of the tubular member is less than a predetermined value.

821. The apparatus of claim 818, wherein the expansion elements comprise:

a first set of expansion elements; and

a second set of expansion elements;

wherein the first set of expansion elements are interleaved with the second set of expansion elements.

822. The apparatus of claim 821, wherein in the first position, the first set of expansion

elements are not axially aligned with the second set of expansion elements.

823. The apparatus of claim 821, wherein in the second position, the first set of expansion elements are axially aligned with the second set of expansion elements.

824. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:

- a support member;
- an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member;
- an actuator coupled to the support member for displacing the expansion device relative to the support member; and
- a cutting device coupled to the support member for cutting the tubular member.

825. The apparatus of claim 824, wherein the cutting device comprises:

- a support member; and
- a plurality of movable cutting elements coupled to the support member.

826. The apparatus of claim 825, further comprising:

- an actuator coupled to the support member for moving the cutting elements between a first position and a second position;
- wherein in the first position, the cutting elements do not engage the tubular member;
- and
- wherein in the second position, the cutting elements engage the tubular member.

827. The apparatus of claim 826, further comprising:

- a sensor coupled to the support member for sensing the internal diameter of the tubular member.

828. The apparatus of claim 827, wherein the sensor prevents the cutting elements from being moved to the second position if the internal diameter of the tubular member is less than a predetermined value.

829. The apparatus of claim 826, wherein the cutting elements comprise:

- a first set of cutting elements; and
- a second set of cutting elements;
- wherein the first set of cutting elements are interleaved with the second set of cutting

elements.

830. The apparatus of claim 829, wherein in the first position, the first set of cutting elements are not axially aligned with the second set of cutting elements.
831. The apparatus of claim 829, wherein in the second position, the first set of cutting elements are axially aligned with the second set of cutting elements.
832. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:
 a support member;
 a cutting device for cutting the tubular member coupled to the support member;
 an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member; and
 a gripping device for gripping the tubular member coupled to the support member, wherein the gripping device comprises a plurality of movable gripping elements;
 wherein the gripping elements are moveable from a first position to a second position;
 wherein in the first position, the gripping elements do not engage the tubular member; wherein in the second position, the gripping elements do engage the tubular member; and wherein, the gripping elements are biased to remain in the first position.
833. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:
 a support member;
 an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member;
 an actuator coupled to the support member for displacing the expansion device relative to the support member; and
 a sealing device for sealing an interface with the tubular member coupled to the support member;
 wherein the sealing device seals an annulus defined between the support member and the tubular member.
834. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:
 a support member;

an expansion device for radially expanding and plastically deforming the tubular member coupled to the support member;
an actuator coupled to the support member for displacing the expansion device relative to the support member; and
a packer assembly coupled to the support member.

835. The apparatus of claim 834, wherein the packer assembly comprises:
a packer; and
a packer control device for controlling the operation of the packer coupled to the support member.

836. The apparatus of claim 835, wherein the packer comprises:
a support member defining a passage;
a shoe comprising a float valve coupled to an end of the support member;
one or more compressible packer elements movably coupled to the support member;
and
a sliding sleeve valve movably positioned within the passage of the support member.